

### Claims

1. A data switching system having a plurality of virtual output queue ingress routers, a plurality of egress routers, a control unit, and a memory-less switching  
5 matrix for interconnecting selected ingress routers and egress routers,

the ingress routers being arranged to receive data traffic segregated into equal sized cells having a header including an egress router output path address, to route the cells into virtual output queues in the ingress router in accordance with the egress router output path address and to generate connection requests for  
10 transmission to the control unit,

the control unit being arranged to arbitrate among the connection requests and control the switching matrix to schedule the connections across the switch,

characterised in that a separate queue is provided in each ingress router for time division multiplex traffic segmented into a plurality of standard cells and the  
15 control unit includes a time division multiplex connection unit arranged to override the normal arbitration procedure for each time division multiplex frame and to provide the switch connections for the cells of the time division multiplex frame.

2. A system according to claim 1 in which the time division multiplex connection  
20 unit includes an interface for receiving data specifying the switch connections for the cells of the time division multiplex frame.

3. A system according to claim 1 further including, for each ingress router, a processor which receives time division multiplex traffic in a first format and converts it  
25 into standard cells.

4. A system according to claim 3 in which the processor includes an interface for receiving data specifying how time division multiplex traffic is converted into standard  
30 cells.

5. A system according to claim 1 in which the control unit is arranged, in each of plurality of arbitration periods, to determine whether the requests include requests compatible with said connections specified by the time division multiplex connection

unit, and, if one or more such requests are found, to control the switching matrix to perform the connection specified by these requests.

6. A system according to claim 5 in which the control unit includes a first pipeline stage performed by said time division multiplex connection unit, a second pipeline stage for satisfying any multicast requests compatible with the connections specified by the time division multiplex connection unit, and one or more stages for satisfying unicast requests compatible with the connections specified by the time division multiplex connection unit and by any satisfied multicast requests.

7. A data switching method for controlling a data switch having a plurality of virtual output queue ingress routers, a plurality of egress routers, a control unit, and a memory-less switching matrix for interconnecting selected ingress routers and egress routers,

- the ingress routers being arranged to receive data traffic segregated into equal sized cells having a header including an egress router output path address, to route the cells into virtual output queues in the ingress router in accordance with the egress router output path address and to generate connection requests for transmission to the control unit,

- the control unit being arranged to arbitrate among the connection requests and control the switching matrix to schedule the connections across the switch, characterised in that the method includes:

- providing a separate queue in each ingress router for time division multiplex traffic segmented into a plurality of standard cells; and
- using a time division multiplex connection unit to override the normal arbitration procedure for each time division multiplex frame to provide the switch connections for the cells of the time division multiplex frame.

8. A method according to claim 7 further including storing in the time division multiplex connection unit data specifying the switch connections for the cells of the time division multiplex frame.

9. A method according to claim 7 further including receiving time division multiplex traffic in a first format, converting it into standard cells, and transmitting it to said ingress routers.

5 10. A method according to claim 9 in which the conversion is performed by a processor which includes an interface for receiving data specifying how time division multiplex traffic is to be converted into standard cells.

10 11. A method according to claim 7 including a further step of determining whether said requests include requests compatible with said connections specified by the time division multiplex connection unit, and, if one or more such requests are found, to control the switching matrix to perform the connection specified by these requests.

15 12. A method according to claim 11 in which said determination step includes a stage of satisfying any multicast requests compatible with the connections specified by the time division multiplex connection unit, and one or more stages of satisfying unicast requests compatible with the connections specified by the time division multiplex connection unit and by any satisfied multicast requests.